AF/1773

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. 08CN8803-25

In Re Application Of: **John E. Davis, et al.**

Serial No.	Filing Date	Examiner	Group Art Unit
09/683,114	November 20, 2001	K. Bernatz	1773

Invention: **DATA STORAGE MEDIA**

TO THE COMMISSIONER FOR PATENTS:

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Dated: **June 24, 2003**

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08CN8803-25

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	JOHN DAVIS ET AL.	) Group Art Unit: 1773
Serial No.:	09/683,114	)
Filed:	November 20, 2001	) Examiner: K. Bernatz
For:	DATA STORAGE MEDIA	)

SUPPLEMENTAL APPEAL BRIEF

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is General Electric Company.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representatives, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1 – 11, 13 – 21, and 23 – 38 are pending in the application. All of the pending claims stand rejected. The rejection of Claims 1 – 11, 13 – 21, and 23 – 38 is appealed. Claims 1 – 11, 13 – 21, and 23 – 38, as they currently stand, are set forth in Appendix A.

IV. STATUS OF AMENDMENTS

Claims 1, 8, 16, 30, 32, and 33 were amended and Claims 34 – 38 were added in an amendment submitted August 28, 2002. The amendment and new claims were entered.

V. SUMMARY OF THE INVENTION

This application relates to data storage media. Optical, magnetic, and magneto-optic media are primary sources of high performance storage technology that enables high storage capacity coupled with a reasonable price per megabyte of storage. Improved areal density has been one of the key factors in the price reduction per megabyte, and further increases in areal density continue to be demanded by the industry. (Paragraph [0001])

Polymeric data storage media have only been employed in areas such as compact disks (CD), and similar relatively low areal density devices, e.g., less than about 1 Gbit/in^2, which are read-through devices requiring the employment of a good optical quality substrate having low

birefringence. (Paragraph [0003])

Storage media of higher areal densities, e.g., greater than 5 Gbits/in^2, employ first surface or near field read/write techniques in order to increase the areal density. For such storage media, although the optical quality of the substrate is not relevant, the physical and mechanical properties of the substrate become increasingly important. For high areal density applications, including first surface applications, the surface quality of the storage media can affect the accuracy of the reading device, the ability to store data, and replication qualities of the substrate. Furthermore, the physical characteristics of the storage media when in use can also affect the ability to store and retrieve data; i.e., the axial displacement of the media, if too great, can inhibit accurate retrieval of data and/or damage the read/write device. (Paragraph [0005])

Conventionally, storage media associated with employing first surface, including near field, techniques have been addressed by utilizing metal, e.g., aluminum, and glass substrates. These substrates are formed into a disk and the desired layers are disposed upon the substrate using various techniques, such as sputtering. (Paragraph [0006]) As is evident from the fast pace of the industry, the demand for greater storage capacities at lower prices, the desire to have re-writable disks, and the numerous techniques being investigated, further advances in the technology are constantly desired and sought. (Paragraph [0007])

To address the industry needs, Appellants have developed a data storage media that is useful in first surface applications. This media can attain an areal density of greater than or equal to about 6 Gbits/in^2, and even up to and exceeding about 25 Gbits/in^2. (Paragraph [0029]) Some of the storage media taught and claimed comprise a rigid core with a plastic film or layer on one or both sides. The plastic may be a thermoplastic, thermoset, or mixture thereof. In additional embodiments, the storage media has surface features (e.g., pits, grooves, edge features, asperities (e.g., laser bumps, and the like), roughness, microwaviness, and the like) placed into the plastic (film, layer, core, substrate) preferably using an embossing technique (i.e., the substrate can be physically patterned). A further advantage of a physically patterned substrate is the elimination of the need for servo-patterning (pits, grooves, etc.) of the data layer. This can eliminate the time consuming process of servo-patterning the data layer; typically a several hour process. In

addition, since the data layer can be wholly or substantially free of servo-patterning, the area of the data layer available for data storage is increased. (Paragraph [0115])

Unexpected results were obtained in relation to further processing and mechanical properties. The plastic withstood the deposition of additional layers (e.g., data layer(s), reflective layer(s), protective layer(s), etc.) using techniques such as sputtering at elevated temperatures, often at temperatures in excess of the glass transition temperature of the plastic. Also, the hybrid storage media containing a rigid substrate having a plastic film or layer attached thereto retained head slap performance as compared to conventional storage media. (Paragraph [0116]) It was further discovered that the operation and usefulness of the storage media was greatly effected by several factors. For example, the particular modal frequencies of the media and their relationship to the operating frequency can effect operation. It was therefore preferred to have a a flexural modulus/density which places the first modal frequency outside of the storage media's normal operating frequency. (Paragraph [0032])

One embodiment of the storage media comprises: a substrate having a surface roughness of less than about 10Å, wherein the substrate has a thickness of up to about 1.2 mm, a plastic film, and a magnetic data layer disposed on said plastic film. The magnetic data layer can be at least partly read from, written to, or a combination thereof by a magnetic field, and the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt. (Claim 1)

VI. ISSUES

1. WHETHER CLAIMS 1 – 11, 13 – 21, AND 23 – 38 MEET THE REQUIREMENTS OF 35 U.S.C. §112, FIRST PARAGRAPH, FOR STORAGE MEDIA OTHER THAN DISKS AND FOR THE PROPERTIES TILT AND AXIAL DISPLACEMENT?

2. WHETHER CLAIMS 1 – 11, 13 – 18, 20, 21, AND 23 – 35 MEET THE REQUIREMENTS OF 35 U.S.C. §112, SECOND PARAGRAPH, WITH RESPECT TO THE TERMS "LESS THAN ABOUT", "AT LEAST ABOUT", "GREATER THAN ABOUT", "A DISK-SHAPED MEDIA" AND "CONTINUOUS"?

3. WHETHER CLAIM 30 IS ANTICIPATED UNDER 35 U.S.C. §102(b) OR IN THE ALTERNATIVE, OBVIOUS UNDER 35 U.S.C. §103(a) OVER U.S. PATENT NO. 5,447,676 TO TANABE ET AL.?

4. WHETHER CLAIMS 1 – 9, 15 – 18, 20, 21, 24 – 26, 32, AND 33 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF U.S. PATENT NO. 4,673,602 TO NAKAYAMA ET AL., U.S. PATENT NO. 6,194,045 B1 TO ANNACONE ET AL., AND U.S. PATENT NO. 5,972,461 TO SANDSTROM?

5. WHETHER CLAIMS 10 AND 11 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF U.S. PATENT NO. 6,156,422 TO WU ET AL.?

6. WHETHER CLAIMS 13, 14, 29, 34, AND 35 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF U.S. PATENT NO. 4,731,155 TO NAPOLI ET AL.?

7. WHETHER CLAIMS 19 AND 38 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF U.S. PATENT NO. 4,659,407 TO LACOTTE ET AL.?

8. WHETHER CLAIMS 23, 27, 28, AND 31 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF U.S. PATENT NO. 5,875,083 TO ONIKI ET AL.?

9. WHETHER CLAIM 30 IS ANTICIPATED UNDER 35 U.S.C. §102(b) OR IN THE ALTERNATIVE, OBVIOUS UNDER 35 U.S.C. §103(a) OVER LEWIS ET AL.?

10. WHETHER CLAIMS 1 – 9, 14 – 21, 23 – 28, 31 – 33, AND 38 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER LEWIS ET AL. IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM?

11. WHETHER CLAIMS 10 AND 11 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER LEWIS ET AL. IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF WU ET AL.?

12. WHETHER CLAIMS 13, 29, 34, AND 35 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER LEWIS ET AL. IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM, AND FURTHER IN VIEW OF NAPOLI ET AL.?

13. WHETHER CLAIM 30 IS ANTICIPATED UNDER 35 U.S.C. §102(e) OR IN THE ALTERNATIVE, OBVIOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL.?

14. WHETHER CLAIMS 1 – 11, 14 – 17, 20, 21, 24 - 26, 32 AND 33 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM?

15. WHETHER CLAIMS 13, 29, 34 AND 35 ARE OBVIOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM, AND FURTHER IN VIEW OF NAKAYAMA ET AL. AND NAPOLI ET AL.?

16. WHETHER CLAIMS 18, 23, 27, 28, AND 31 ARE OBVOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM, AND FURTHER IN VIEW OF ONIKI ET AL.?

17. WHETHER CLAIM 19 IS OBVIOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM, AND FURTHER IN VIEW OF LACOTTE ET AL.?

18. WHETHER CLAIM 38 IS OBVIOUS UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM, AND FURTHER IN VIEW OF LACOTTE ET AL. AND ONIKI ET AL.?

VII. GROUPING OF CLAIMS

The claims stand together.

VIII. ARGUMENT

A. 35 U.S.C. §112

1. CLAIMS 1 – 11, 13 – 21, AND 23 – 38 MEET THE REQUIREMENTS OF 35 U.S.C. §112, FIRST PARAGRAPH.

Claims 1 - 11 and 13 - 33 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly not being enabling for "storage tape or ribbon" while enabling for "disk". The claims are directed to a data storage media. (Preamble of the claims) Throughout the specification, data storage media are discussed. The particular types of storage media are defined in the particular claims with reference to the limitations set for in those claims. Data storage media are supported by the specification and claims. The claims are enabled as drafted and similarly would be enabled for a preamble of "an article". The preamble is merely intended to identify the type of claim and not to limit the claim. With respect to a "storage tape", if it has all of the features enumerated in the body of the claim, it is covered by the claim; if it does not comprise all of the elements of the body of the claim, it is not covered by the claim. For instance, if the storage tape doesn't have "a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt" or "a magnetic data layer disposed on a plastic film", it is not covered by Claim 1. Applicants contend that the limitations of the claims are fully enabled by the specification as originally filed.

The Examiner contends that discussions in the specification concern disks and their properties. (Paper 8, page 11) It is true that an embodiment of the present invention is a disk. However, applicants have not required the storage media to be "round". A disk is defined as "any of several types of media consisting of thin, round plates of plastic or metal..." *Webster's Encyclopedic Unabridged Dictionary of the English Language*, Copyright 1996, Random House Value Publishing, Inc. Applicants do not require the media to be "round", they require the media to comprise: a substrate having a surface roughness of less than about 10Å, wherein the substrate has a thickness of up to about 1.2 mm; a plastic film; and a magnetic data layer disposed on said plastic film; wherein said magnetic data layer can be at least partly read from, written to, or a

combination thereof by a magnetic field; and wherein the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt. (Claim 1) All of these claim elements are clearly supported by the specification. Although an embodiment of this media is a disk, there is no requirement that it be a disk.

With respect to tilt, it is contended that "tilt and axial displacement are critical or essential properties of the invention, but are not enabled by the disclosure..." because "applicants have not recited the test method used to measure these properties and the examiner does not deem them to be art recognized." (Paper 4, page 3). Applicants respectfully disagree. Both tilt and axial displacement are terms commonly known and understood in the art and are "art recognized". Tilt is a standard measurement of an angle from the horizontal plane. Unlike a measurement where different measurement techniques produce totally different results, the only information needed to determine the tilt is the measurement state, i.e., at rest or spinning at a certain rate. Since the application clearly states "a tilt of about 1° or less, *measured in a resting state*", this qualification is clearly set forth. (Claim 1; Paragraph 0031; emphasis added)

The Examiner appears to contend that "at rest" is confusing because the measurement of tilt would be different "rest sitting on a table, or at rest held within a mounting". (Paper 8, page 12) The Examiner refers to various U.S. Patents to discuss degree of warp. However, the warp referred to by the Examiner is "warp [] directly related to the clamping pressure/strength when held in a mounting" or "clamping force". (Paper 8, page 12) Applicants would contend that such media are not "at rest", actually they are under "clamping force" or "clamping pressure" as noted by the Examiner. As would be clear to an artisan, "at rest" refers to determining tilt when the media is in a free state, i.e., not spinning, not clamped, and without applying pressure. As is noted by the Examiner in the quotes from the various references, the clamping force causes the warp. Clamp induced warp is a function of the clamp design. When discussing tilt, Appellants are discussing a property of the media. This tilt is measured at rest.

2. CLAIMS 1 – 11, 13 – 21, AND 23 – 38 MEET THE REQUIREMENTS OF 35 U.S.C. §112, SECOND PARAGRAPH.

Claims 1 – 11 and 13 – 33 have been rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to Claims 1, 20, 21, and 31 – 33, the phrase "less than about 10 Å" and, in Claims 2 – 4, 10, and 11, the phrase "as least about", allegedly renders the claims indefinite because the metes and bounds are ill defined. The Examiner contends, for example, that the phrase "'less than X', meaning any value less than X, excluding X, is well defined if X is well defined. If X is not well defined, then the phrase is indefinite because it is unclear which values are to be excluded from the range." (Paper 4, page 4). Applicants respectfully disagree with this rejection.

Since removal of the term "about" is stated as sufficient to overcome this rejection (see Paper 4, page 4), the basic concern appears to be that the term "about" is allegedly indefinite. The PTO's basis for the indefiniteness rejections based on the term "about" seems to be founded in *Amgen, Inc. vs. Chugai Pharmaceutical Co.*, 927 F2d 1200, 18,USPQ2d 1016 (Fed. Cir. 1991)" (hereinafter *Amgen*). However, the facts and issues present in *Amgen* are not applicable to the instant application.

Amgen involved an appeal of a district court decision in which claims of a U.S. Patent were held invalid as being indefinite for inclusion of the limitation "at least about 160,000" in relation to an 'activity' determined by a bioassay relied upon in the claim.
According to the Court:

> The District Court found that "bioassays provide an imprecise form of measurement with a range of error" and that use of the term "about" 160,000 IU/AU, coupled with the range of error already inherent in the specific activity limitation, served neither to distinguish the invention over the close prior art... nor to permit one to know what specific activity values... if any, might constitute infringement.

(*Id* at 1219

Further, the Court noted that the statute requires:

> [t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

and that:

> [a] decision as to whether a claim is invalid under this provision requires a determination whether those skilled in the art would understand what is claimed. *See Shatterproof Glass Corp. v. Libbey-Owens Ford Co.,* 758 F.2d 613, 624, 625, 225 USPQ 634 641 (Fed. Cir. 1985) (Claims must "reasonably apprise those skilled in the art" as to their scope and be "as precise as the subject matter permits.").

In affirming the District Court ruling, the Court agreed that because the term "about" in this instance "gives no hint as to which mean value...constitutes infringement", the term "at least about" renders the claims to be invalid for indefiniteness. However, in arriving at this conclusion the Court also cautioned:

> our holding that the term "about" renders indefinite claims 4 and 6 should not be understood as ruling out any and all uses of this term in patent claims. It may be acceptable in appropriate fact situations, *e.g., W.L. Gore & Assocs., Inc. v. Garlock, Inc.,* 721 F.2d 1540, 1557, 220 USPQ 303, 316 (Fed Cir. 1983) ("use of 'stretching... at a rate exceeding about 10% per second' in the claims is not indefinite"), even though it is not here.

As stated above, the facts of *Amgen* are not applicable to the instant rejection of Claims 1 – 4, 10, 11, 20, 21, and 31 – 33. In *Amgen* the uncertainty in defining the limitation at issue is borne of the error inherent in the test itself. In the present situation, however, the limitation recited in the claims, e.g., "less than about 10Å" is directed to the measurement of a size. The recited measurements are specific and clearly understood. Unlike the bioassay at issue in *Amgen*, the measurement of size, modulus, coercivity and displacement, for example, do not carry the same or a similar level of uncertainty as to the result. Similar to a measurement of time, the measurements at issue are definite. In *W.L.*

Gore & Assocs., Inc. v. Garlock, Inc. it a was noted that the term "exceeding about 10% per second could clearly be assessed through the use of a stopwatch."(emphasis added) and the mere inclusion of "about" does not render a claim invalid.

The Examiner has pointed to *Ex parte Lee,* 31 USPQ2d 1105 (BdPatApp&Int. 1993). This case was directed to whether a range of "less than about 5 grams/10 minutes" was anticipated by or obvious over a range of "0.1 to 40 grams/10 minutes". Neither the term "about" nor a 35 U.S.C. §112, second paragraph, were subjects of this case. In discussing the obviousness rejection, the court, in dicta, mentions that perhaps a 35 U.S.C. §112, second paragraph rejection would have been appropriate. However, as stated, there was no 35 U.S.C. §112, second paragraph rejection, and the discussion thereof is merely dicta; i.e., it does not represent the current state of the law regarding the term "about". It is noted that the court in *Ex parte Lee* even admits that they will interpret the language in a "reasonable manner" and that "it follows that the value of 5 grams/10 minutes itself is encompassed within the claim recitation 'less than about 5 grams/10 minutes.'" *Id.*, p. 1107.

As stated above, the terms employed by Appellants are definite. Appellants intend the ranges to be inclusive, not exclusive of the stated value, hence the use of the term about. Given the precision and accuracy with which one skilled in the art can determine the elements specified in the present application, those skilled in the art would certainly understand the limitations recited in Claims 1 – 4, 10, 11, 20, 21, and 31 – 33. These claims reasonably apprise one skilled in the art as to the scope, i.e., the "metes and bounds" of the claimed invention, in as precise a term as is required by 35 U.S.C. §112, second paragraph.

With respect to the terminology "disk shaped media", it is Appellants understanding that antecedent basis is directed to having a term mentioned before it is used with definite articles such as "the" or "said". In other words, Appellants must claim "a storage media" before referring to "the storage media". As stated in the prior response, "disk shaped media" are not terms used in the claims. To this, the Examiner contends that:

> the claims require properties that are only found (and disclosed) in disk shaped media. By further limiting the "storage media" to require the claimed limitations, applicants are also requiring the storage media to be in the form of a disk (or it could not possess the claimed limitation), yet there is no positive recitation in the claim(s) that the storage media ***is*** disk shaped. It is this lack of positive antecedence which is missing the above identified claims. (Paper 8, page 15)

Again, there is no requirement to have antecedent basis for a non-element. If the Examiner can prove that only "disk shaped media" can comprise: a substrate having a surface roughness of less than about 10Å, wherein the substrate has a thickness of up to about 1.2 mm; a plastic film; and a magnetic data layer disposed on said plastic film; wherein said magnetic data layer can be at least partly read from, written to, or a combination thereof by a magnetic field; and wherein the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt (Claim 1); Appellants respectfully request such proof. Appellants, however, without such evidence, continue to contend that the claims are not so limited, there is no need or requirement to read such a limitation into the claims, and no antecedent basis for such terminology is needed.

B. SUMMARY OF THE ART AND THE EXAMINERS INTERPRETATION THEREOF

Appellants would first like to recognize and point out that the data storage media art is a very crowded area of art. As is clearly evident in many homes within the United States, technology surrounding data storage has changed drastically in the past 30 years. Whereas 30 years ago many Americans would not be familiar with a computer, how it works or its potential uses, computers are prevalent in American homes. Main frames are not longer prominent, personal computers have replaced these "archaic" devices. Even preschoolers use computers for learning and play games. The video industry has similarly changed drastically from the old reel film (on which many people still have "old movies", to video cassettes, and recently to DVDs). Cassette tapes are being replaced with compact discs. Basically, the data storage industry is

screaming forward at an incredible rate.

There is a constant desire and need to improve the storage media; e.g., to find new ways to store greater amounts of data in even smaller areas. However, the mere fact that there is a need or desire, or that a reference generically claims a "better media", a "flat" surface, a "low" roughness, etc. Is not a teaching with respect to any of those properties, etc. First of all, an artisan would read those claims in relation to the technology at the time of the reference (what they could have possibly meant by their teaching), and not in hindsight provided by Appellants application.

As can be noted from the "Issues" section hereof, many of the references are employed in various combinations to allegedly render the present application unpatentable. In order to simplify the rejections, clarify the teachings of the references, and to clearly and concisely respond to the rejections, descriptions of all of the references are set for below.

Tanabe et al. is directed to optical recording media, methods for production thereof, substrates therefore, and methods of production of those substrates. In addressing the problem of the effects on birefringence of forming grooves for tracking on an optically clear disk, they claim the production of preformat reproduction signal with uniformity and high contrast. They teach forming an electroconductive layer on a substrate with a photoresist thereon. The photoresist is exposed to light and is developed to uncover the electroconductive layer. An electrodeposit layer is then formed on the uncovered electroconductive layer. (Col. 7, lines 30 – 60) Tanabe et al. do not teach, discuss, or mention tilt; radial or tangential.

The Examiner contends that Tanabe et al. allegedly disclose media for data comprising a metal substrate, a plastic film, and a data layer disposed on the plastic film, where the data layer can be read from, written to, or a combination thereof by an energy field, wherein the energy field is electric or magnetic. Tanabe et al. allegedly further disclose glass substrate, patterning the plastic film with geographic locators, and a film thickness as disclosed by Appellants. The Examiner admits Tanabe et al. fail to disclose a magnetic layer on the substrate, tilt, axial displacement, and controlling the surface roughness to within Appellants' claimed ranges. (Paper 4, pages 6 - 9)

Nakayama et al. are further relied upon to teach that a polymer film should have a glass temperature as high as possible in order to have excellent mechanical and surface properties. (Paper 4, pages 24 – 25) In the section cited by the Office Action, Nakayama et al. make a generic, non-enabling, sweeping statement that "[t]he resin which forms the surface layer is required to be excellent in spreadability, capable of exhibiting a glass transition point as high as possible after curing..." (Col. 3, lines 17 – 20) They fail to explain "as high as possible" to accomplish what purpose, and fail to define "high". In the examples they fail to provide glass transition points and they heat the substrate to 150°C at most. (Col. 7, lines 15 – 18)

The Examiner contends that Nakayama et al. allegedly teach that composite substrates for both magnetic and optical recording are equivalent in the art. The Examiner admits Nakayama et al. fail to disclose a tilt, axial displacement, and controlling the surface roughness to within Appellants' claimed ranges. (Paper 4, pages 8 - 9)

Sandstrom discloses a "Rewritable Optical Data Storage Disk Having Enhanced Flatness". In order to attain the "enhanced flatness" and avoid process induced surface variations such as warpage and tilt, Sandstrom disclosed a substrate with increased thickness that is greater than or equal to approximately 1.5 mm and less than or equal to approximately 2.5 mm. (Title and Abstract and throughout the Specification) Although Sandstrom, in a general discussion of the art mention that substrate materials can comprise a variety of materials, the focus and overall teaching of Sandstrom, when read as a whole, is to increasing the thickness of a polycarbonate substrate in order to attain the desired physical and mechanical characteristics (flatness...). Sandstrom fails to teach tilt in a storage media having a substrate thickness of up to about 1.2 mm.

The Examiner contends that Sandstrom allegedly teaches both tilt and axial displacement are undesired in a recording medium and that substrates possessing high flatness are known to be desired in the recording industry to allow for high density near field recording systems. The Examiner admits Sandstrom fail to disclose a controlling the surface roughness to within Appellants' claimed ranges. (Paper 4, pages 8 - 9)

Annacone et al. disclose a "Rigid Disc Substrate Comprising a Central Hard Core

Substrate With a Hard, Thermally and Mechanically Matched Overlying Smoothing Layer and Method for Making the Same". They focus on a disc having a hard central core with a smoothing layer. The core has a thickness of 0.012 inches (0.3048 mm) to 0.050 inches (1.27 mm), while the smoothing layer has a thickness of less than 40 microns. The smoothing layer is a layer "that can be polished to a very smooth surface finish." (Col. 4, lines 24 - 26)

The Examiner contends that Annacone et al. teach that substrates for recording media are required to have a very smooth surface finish of less than 10 Å in order to allow extremely low flying heights and increased recording density. (Paper 4, page 9)

Lewis et al. are directed to metallized information carrying discs. Lewis et al. admit that significant changes have occurred with "the introduction of the laser to the industry, a new information storage system has been developed..." (Col. 1, lines 31 – 51) They teach a process where at least one surface of a substrate has a polymeric composition and a reflective or conductive coating before embossing. They disclose an embossing process to make discs from these blanks. (Col. 1, lines 55 – 65) Lewis et al. fail to teach, discuss, or mention tilt; radial or tangential. Actually, to the contrary, Lewis et al. teach that flatness is not necessary. (Col. 6, line 10) In other words, Lewis et al. fail to teach tilt, and, based upon the teachings of Lewis et al., one of ordinary skill in the art would not believe that tilt is relevant.

The Examiner contends that Lewis et al. allegedly disclose a storage media for data comprising a metal substrate, a plastic film, and a data layer disposed on the plastic film, where the data layer can be read from, written to, or a combination thereof by an energy field, wherein the energy field is electric or magnetic; wherein the property of tilt is allegedly obviously present (merely because the "prior art product is [allegedly] substantially identical in structure..."). No evidence showing that the tilt is necessarily present has been provided by the Examiner. Lewis et al. allegedly further disclose a double sided media, embossing the plastic film with geographic locators, and Appellants film thickness. The Examiner admits Lewis et al. fail to disclose a magnetic layer on the substrate, tilt, and axial displacement. (Paper 8, pages 15 – 16)

Ishida et al. disclose a master information carrier formed using a photoresist. The lithographical development of the photoresist forms discontinuous islands of photoresist over

which metal is deposited. (Figures 1 and 12a – 12c; Col. 19) Ishida et al. teach that the substrate "has flexibility to a certain extent so that the surface of the master information carrier can compensate a fine wimple or bending..." (Col. 21, lines 16 – 22) As with Lewis et al. and Tanabe et al., Ishida et al. fail to teach or discuss tilt. To the contrary, based upon the teachings of Ishida et al. that the substrate has flexibility, an artisan would not believe that tilt is relevant.

The Examiner contends that Ishida et al. allegedly teach a storage media for data comprising a metal substrate, a plastic film, and an optical or magnetic data layer disposed on the plastic film, where the data layer can be read from, written to, or a combination thereof by an energy field, wherein the energy field is electric or magnetic; wherein the property of tilt is allegedly obviously present (merely because the "prior art product is [allegedly] substantially identical in structure..."). No evidence showing that the tilt is necessarily present has been provided by the Examiner. The Examiner admits Ishida et al. fail to disclose a tilt and axial displacement. (Paper 8, pages 20 – 22)

Wu et al. teach a high density magnetic recording medium with high HR and low MRT by employing particular layers with particular parameters. Wu et al. do not address tilt or solve the deficiencies of the other references of record.

Oniki et al. teach a magnetic disk having planarized CSS zone. They are relied upon to teach thickness values. (Paper 4, lines 14) However, the values discussed in Oniki et al. conflict with the specific teachings of the entire patent of Sandstrom. Clearly there is no motivation to combine these references and no expectation of success, particularly with the teachings of Sandstrom. Oniki et al. fail to remedy all of the above discussed deficiencies of Tanabe et al., Lewis et al., Ishida et al., and Nakayama et al.

Lacotte et al. teach a process for manufacturing optical disks by pressing. They teach forming the disks by using several sheets of thermoformable material film onto which the information is stamped. (Col. 3, lines 29 – 37) Lacotte et al. do not address tilt or solve the deficiencies of the other references of record.

Napoli et al. are directed to a process for forming a lithographic mask. They teach embossing, etching the valleys to remove resin and expose the substrate. (Col. 3, lines 60 – 68)

They do not mention thicknesses, properties, or the ability of the resultant substrate to be used as a storage media. Napoli et al. fail to address tilt or solve the deficiencies of the other references of record.

C. DECLARATION OF MR. REITZ

In the rejections, the Examiner has relied upon inherency as a means of rejecting the claims since the references fail to teach the elements taught and claimed in the present application. In order to explain that the elements are not inherent features of these references, and to explain what one of skill in the art would understand the references of mean, Appellants obtained a declaration from Dr. John Bradford Reitz. (set forth in Appendix B)

Dr. Reitz has a B.S. in Chemistry from Furman University and a Ph.D. in Chemistry from Stanford University. Dr. Reitz, an employee of General Electric Company, had worked in the area of data storage media for nearly 5 years.

Dr. Reitz reviewed the present application as well as the art of record. Dr. Reitz clarified that CDs, for example, allow a tilt of greater than 1.5°. He explained that:

> At the time of the Patent Application, an artisan would not have believed that Tanabe et al., Lewis et al., or Ishida et al. were teaching, requiring, or needing a tilt of 1° or less. Actually, an artisan knows that the media taught in those references does not require such a characteristic to function and meet the specific characteristic taught in those references. (Declaration, item 11)

In his evaluation, Dr. Reitz point out that:

> From careful evaluation of the specification as well as the examples in Tanabe et al., Lewis et al., and Ishida et al., it is clear that they do not discuss tilt. Actually, they mention the relaxed standard they have in statements such as in Ishida et al. where it is stated that the substrate "has flexibility to a certain extent so that the surface of the master information carrier can compensate a fine wimple or bending..." (Col. 21, lines 16 – 22). This is further supported by Lewis et al. where they teach that flatness is not necessary. (Col. 6, line 10) Storage media can be produced in accordance with Tanabe et al., Lewis et al., and Ishida et al., meeting the requirements and characteristics taught in those references, respectively, that has a tilt of greater than 1.5°. (Declaration, items 8 – 9)

Dr. Reitz further clarifies the teachings of Nakayama regarding optical and magnetic media:

> With respect to Nakayama et al.,... any... artisan, would not interpret that reference as teaching that optical and magnetic media are equivalent. To the contrary, it is very well understood that optical and magnetic media are not equivalent. Granted, some substrates can be manufactured to be used in either optical or magnetic applications, but those are very specific disks, not a generality. Generally, the contrary applies.
>
> It is actually well know that, since these disks have such different requirements, e.g., the birefringence of the optical media is very important while irrelevant for magnetic media, a disk that is optimum in one area may not function in the other... Magnetic media substrates and optical media substrates are not equivalent and Nakayama et al. do not teach their equivalence. An artisan, particularly at the time of the Patent Application, would not combine a random sampling of optical media patents with some magnetic media patents, to attain the Patent Application.

D. 35 U.S.C. §102

3, 9, 13. CLAIM 30 IS PATENTABLE UNDER 35 U.S.C. §102(b)AND 35 U.S.C. §103(a) AS NOT ANTICIPATED BY AND NONOBVIOUS OVER TANABE ET AL. AND LEWIS ET AL., AND PATENTABLE UNDER 35 U.S.C. §102(e) AND UNDER 35 U.S.C. §103(a) AS NOT ANTICIPATED BY AND NONOBVIOUS OVER ISHIDA ET AL.

Claim 30 is directed to a storage media for data comprising: a metal substrate; a plastic film; and a data layer disposed on said plastic film. The data layer can be at least partly read from, written to, or a combination thereof by at least one energy field, wherein the energy field comprises at least one of an electric field and a magnetic field. Additionally, the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt.

To anticipate a claim under 35 U.S.C. §102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 USPQ2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Even if all of the elements are not expressly stated in a single reference, a claim may be anticipated if non-disclosed elements would

have been inherent in the prior art. However, it is well settled that "anticipation of inventions set forth in product claims cannot be predicated on mere conjecture respecting the characteristics of products that might result from the practice of processes disclosed in references." *Phillips Petroleum Co. v. U.S. Steel Corp.*, 673 F. Supp. 1278, 6 USPQ2d 1065, 1076-77 n.12 (D. Del. 1987), *aff'd*, 865 F.2d 1247, 9 USPQ2d 1461 (Fed. Cir. 1989); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *appeal after remand*, 842 F.2d 1275, 6 USPQ2d 1277 (Fed. Cir. 1988). Instead, a "feature is inherent if it naturally occurs under the conditions set forth in the reference..." *Consolidated Aluminum Corp. v. Foseco International Ltd.*, 10 USPQ2d 1143, 1165 (N.D. Ill. 1988).

The Examiner concedes that the references do not teach a claimed limitation while, at the same time, stating that the references anticipate the present invention by inherency. However, anticipation by inherency only happens if the anticipating elements (1) are necessarily present and (2) one of ordinary skill in the art recognize or appreciate the inherent element. See, e.g., *Galaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1046 (Fed. Cir. 1995). Moreover, inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *Continental Can Co. v. Monsanto*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) Furthermore, "in relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the

determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)" MPEP 2112.

First, a basis in fact and/or technical reasoning that reasonably supports the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art has not been supplied. A mere allegation that the property is present because the products are allegedly substantially identical in structure (see Paper 4, page 7) does not constituted a "basis in fact and/or technical reasoning". Merely because a group of media have substrates, data layers, reflective layers, dielectric layers, and protective layers in no way means that the media are "identical in structure" or that these media would, for example, be adequate for a given application (e.g., as a CD, or as a DVD (e.g., a DVD-5 or a DVD-9...). Because a media comprises a particular layer does not in any way suggest all of the properties of that layer or of the resultant media.

The composition, location, geometry, size, and manner of forming the various layers and substrate can all be factors in rendering media substantially different from one another. The industry has advanced from floppy discs to hard discs, from records, cassettes and the like to CD's, laser discs, and DVD's. Slight changes in a CD, e.g., reading from the surface of the disc instead of through the disc, enabled a significant increase in storage capacity. Adjustment of the wavelength of the read laser and/or the reflectivity of the reflective layer enabled the use of two data layers, essentially doubling storage capacity. There are numerous papers and patents about how to put the data layers on the discs, e.g., photoresists. Patents discuss how to reduce birefringence, improve readability and reproducibility. Many of these patents focus on changes that, in hindsight, may appear insignificant but which were substantial and have advanced the technology to where DVD's are becoming as common as VCR's in average homes. Advances and inventions must be considered at the time of the invention, not in hindsight. Particularly in this field, a period of as little as one year can bring a substantial change in the industry. What was impossible, even unthinkable, one year is commonplace a year later.

Appellants have identified several characteristics, including tilt, microwaviness, roughness, and the like, which enables further advancement of the storage media technology. No single reference teaches or suggests the significance or presence of many of these features. Even if the understanding of the industry of these, and other features, has changed since the time of the present invention, such change does not effect the patentability of the present application. In other words, merely because a feature or characteristic may appear desirable today does not mean or even suggest that is was desirable, understood, considered, or inherent at the time of the present application. Furthermore, as stated above, if the Examiner is alleging that the Appellants have optimized conditions (e.g., improved on the teachings in the various references), it is noted that inherency can not be based upon what would result due to optimization of conditions, because the result is not necessarily present in the prior art; *In re Oelrich*, p. 326.

It is further noted that "in relying upon the theory of inherency, the *examiner* must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, p. 1464 (emphasis added). No such support has been provided. As opposed to providing evidence that the properties are necessarily present, the Examiner merely states that "there is no evidence of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product." First, this mere statement of the Examiner fails to establish that the properties are necessarily present. Second, Appellants have provided evidence, namely the Declaration of Dr. Reitz. Dr. Reitz reviewed these references and explained that, with the information from the current application (i.e., in hindsight), media disclosed in Tanabe et al., Lewis et al., and Ishida et al. can be formed in accordance with the *present application* to meet the claims of the present application. However, with the skill in the art prior to the present application (i.e., without hindsight), one would not produce a storage media having a tilt as presently claimed.

> 8. From careful evaluation of the specification as well as the examples in Tanabe et al., Lewis et al., and Ishida et al., it is clear that they do not discuss tilt. Actually, they mention the relaxed standard they have in statements such as in Ishida et al. where it is stated that the substrate "has flexibility to a certain extent

so that the surface of the master information carrier can compensate a fine wimple or bending..." (Col. 21, lines 16 – 22). This is further supported by Lewis et al. where they teach that flatness is not necessary. (Col. 6, line 10)

9. Storage media can be produced in accordance with Tanabe et al., Lewis et al., and Ishida et al., meeting the requirements and characteristics taught in those references, respectively, that has a tilt of greater than 1.5°. Actually, standard specifications for CD's, for example, allow a tilt of greater than 1.5°.

10. Many characteristics, and in particular the combination of characteristics, set forth in the Patent Application are not identified or addressed in any of the prior art of record. Examples of some of these characteristics include tilt, microwaviness, and roughness. The Patent Application identifies a unique product that meets certain characteristics, thereby allowing it to attain high aerial densities while being mass producible.

11. At the time of the Patent Application, an artisan would not have believed that Tanabe et al., Lewis et al., or Ishida et al. were teaching, requiring, or needing a tilt of 1° or less. Actually, an artisan knows that the media taught in those references does not require such a characteristic to function and meet the specific characteristic taught in those references.

Considering that anticipation requires that presence of each and every element of the present claims, that inherency requires more than probabilities or possibilities, that at least the tilt is not necessarily present, that the media of the cited references will work as described by the references at a tilt of greater than 1°, these references fail to anticipate any of the claims of the present application.

Additionally, for an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). As stated above, for at least the reason that none of the references teach tilt as is taught and claimed in the present application, an element of the present claims is missing, and the claims are non-obvious.

4 - 8. CLAIMS 1 – 9, 15 – 18, 20 – 22, 24 – 26, 32, AND 33 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER TANABE ET AL., IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM (HEREINAFTER THIS

COMBINATION IS REFERRED TO AS "TNAS"). CLAIMS 10 AND 11 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER TNAS IN VIEW OF WU ET AL. CLAIMS 13, 14, 29, 34, AND 35 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER TNAS IN VIEW OF NAPOLI ET AL. CLAIMS 19 AND 38 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER TNAS IN VIEW OF LACOTTE ET AL. CLAIMS 23, 27, 28, AND 31 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER TNAS IN VIEW OF ONIKI ET AL.

10 - 12. CLAIMS 1 – 9, 14 – 28, 31 – 33, AND 38 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER LEWIS ET AL. IN VIEW OF NAKAYAMA ET AL., ANNACONE ET AL., AND SANDSTROM (HEREINAFTER THIS COMBINATION IS REFERRED TO AS "LNAS"). CLAIMS 10 AND 11 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER LNAS IN VIEW OF WU ET AL. CLAIMS 13, 29, 34, AND 35 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER LNAS IN VIEW OF NAPOLI ET AL.

14 - 17. CLAIMS 1 – 11, 14 – 17, 20, 21, 24 - 26, 32 AND 33 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER ISHIDA ET AL. IN VIEW OF ANNACONE ET AL. AND SANDSTROM (HEREINAFTER THIS COMBINATION IS REFERRED TO AS "IAS") CLAIMS 13, 29, 34 AND 35 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER IAS IN VIEW OF NAKAYAMA ET AL. AND NAPOLI ET AL. CLAIMS 18, 23, 27, 28, AND 31 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER IAS IN VIEW OF ONIKI ET AL. CLAIM 19 IS PATENTABLE UNDER 35 U.S.C. §103(a) OVER IAS IN VIEW OF LACOTTE ET AL. CLAIM 38 IS PATENTABLE UNDER 35 U.S.C. §103(a) OVER IAS IN VIEW OF LACOTTE ET AL. AND ONIKI ET AL.

As is evident from the issue summarized above, many references have been used in various combinations to reject the present application. Appellants will address the references in the combinations set forth by the Examiner; addressing related groups together for clarity and to reduce the redundancy of the arguments. A summary of the references as well as the Examiner's position can be found in Section VIII.B. of this Appeal Brief.

It is also noted that, as is evident from the rejection, it was necessary for the Examiner to pick and choose information from a large number of references to reject each claim, i.e., typically at least 4 references. Appellants maintain that the Examiner has used an improper standard in arriving at the rejection of the above claims under §103, based on improper hindsight. More specifically the Examiner has used Appellants' disclosure to select portions of the cited

references to allegedly arrive at Appellants' invention. Section 103 sets out the test for obviousness determinations. It states, in pertinent part, that such determinations are to be made by consideration of

> the differences between subject matter sought to be patented and the prior art such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the [pertinent] art.

In making a Section 103 rejection, the Examiner bears the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1998). The Examiner "can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in art would lead that individual to combine the relevant teachings of the references". *Id.* "The mere fact that the prior art could be [] modified would not have made the modification obvious unless the prior art suggested the desirability of the modification'") (citation omitted); *In re Stencel*, 828 F.2d 751, 755, 4 U.S.P.Q.2d 1071, 1073 (Fed. Cir. 1987)

Furthermore, as discussed in detail above, properties that are allegedly "inherent" must be (1) necessarily present and (2) one of ordinary skill in the art recognize or appreciate the inherent element. See, e.g., *Galaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1046 (Fed. Cir. 1995). Merely stating that the "product is substantially identical in structure" does not meet the burden of providing basis in fact and/or technical reasoning. (Paper 8, page 15) Clearly a product can be formed having a substrate, a data layer, reflective layer(s), a lubricating layer, and having a surface roughness of greater than 50Å. Merely because certain layers are present does not make the properties necessarily present.

In all of the above rejections, the Examiner's argument is premised on a few main factors: (1) the alleged inherency of tilt; (2) that Nakayama et al. teach the interchangeability of magnetic and optical media; and (3) that picking and choosing the various information from the references is acceptable. The Examiner admits that none of the references teach the tilt and claims in each case that the property of tilt is obviously present because the prior art product is substantially identical in structure. As set forth in detail above, properties that are allegedly "inherent" must

be (1) necessarily present and (2) one of ordinary skill in the art recognize or appreciate the inherent element. See, e.g., *Galaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1046 (Fed. Cir. 1995). Merely stating that the "product is substantially identical in structure" does not render the property "necessarily present". Clearly a product can be formed having a substrate, a data layer, reflective layer(s), a lubricating layer, and having a surface roughness of greater than 50Å and/or a tilt of greater than 3°, for example. Merely because certain layers are present does not make the properties presently claimed necessarily present. As is supported by the Declaration of Dr. Reitz, tilt is not inherent.

With respect to Nakayama et al., this reference is relied upon as allegedly teaching that magnetic and optical recording are equivalent in the art based upon the Title and Col. 2, lines 9 – 15 of Nakayama et al. The Title states: "Composite Substrate Plate For Magnetic Or Optical Disk And Process For Production Thereof". Col. 2, lines 9 – 15 state that the primary object of Nakayama et al. is to provide a composite substrate plate for a magnetic or optical disk that has certain properties. As is explained in the declaration of Dr. Reitz, Nakayama et al.'s inference that their specific substrate can be employed as optical substrates or magnetic substrates does not translate into the generalization that magnetic and optical substrates are interchangeable. Nakayama et al. do not state that such substrates are interchangeable, they only teach that their particular substrate may be useful as a magnetic or optical substrate. Magnetic and optical media are read from and written to in different fashions and have different specifications, e.g., magnetic media are not concerned with birefringence while birefringence is a very important characteristic of an optical media.

The Examiner reminds Appellants that:

> 'the test for obviousness is not whether features of the secondary reference may be bodily incorporated into the primary reference's structure, nor whether the claimed invention is expressly suggested in any one or all of the references, rather the test is what the combined teachings would have suggested to those of ordinary skill in the art.' *Ex parte Martin* 215 USPQ 543, 544 (PO BdPatApp 1981). (Paper 8, page 17)

The Examiner then proceeds to allege that:

> [i]n the instant case, Nakayama et al. clearly teach that substituting an optical storage layer (especially a near-field optical layer) for a magnetic storage layer would be known to one of ordinary skill in the art. In addition, the examiner notes that the substrates for both optical and magnetic data storage media would require optimization of nearly identical properties (i.e., surface roughness, flatness, durability, cost, mass, etc.) (Paper 8, pages 17 – 18)

The Examiner has, however, failed to provide evidence of this teaching. As stated above, in Dr. Reitz Declaration, Nakayama et al. do not state that such substrates are interchangeable, they only teach that *their* particular substrate may be useful as a magnetic or optical substrate. Magnetic and optical media are read from and written to in different fashions and have different specifications, e.g., magnetic media are not concerned with birefringence while birefringence is a very important characteristic of an optical media. Appellants have submitted a declaration from one skilled in the art and he clearly states the understanding of Nakayama et al. as well as the general understanding of an artisan: it can not be presumed that optical media and magnetic media are interchangeable and Nakayama et al. do not teach that all of such media are interchangeable.

In making a §103 rejection, the Examiner bears the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 USPQ 2d 1596, 1598 (Fed. Cir. 1998). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). The Examiner "can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in art would lead that individual to combine the relevant teachings of the references". Id.

When, as here, the §103 rejection was based on selective combination of the prior art references to allegedly render a subsequent invention obvious, "there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Id.* Stated in another way, "[i]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."

In re Fritch 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

Considering that Nakayama et al. merely teach a specific substrate and suggest that their particular substrate may be useful in both the optical and magnetic media fields, and fail to teach or show that optical media and magnetic media are equivalents, Nakayama et al. fail to provide motivation to combine references directed to optical media with references directed to magnetic media. as alleged by the Examiner. Nakayama et al. has been relied upon to provide the motivation to combine Tanabe et al., Lewis et al., and Ishida et al. with various other references. However, since Nakayama et al. fail to teach the equivalence relied upon in the Office Action, all of the proposed combinations are not valid and fail to establish a prima facie case of obviousness. These failed combinations include all of the combinations with TNAS and LNAS, as well as the combination of IAS with Nakayama et al. and Napoli et al.

In addition to the above reasons for failure to establish a *prima facie* case of obviousness, Appellants further maintain that an improper standard of arriving at the rejection, based upon improper hindsight that fails to consider the totality of Appellants' invention and to the totality of the cited references, has been applied. More specifically the Examiner has used Appellants' disclosure to select portions of the cited references to allegedly arrive at Appellants' claimed invention. In doing so, the Examiner has failed to consider the teachings of the references or of Appellants' invention as a whole in contravention of §103, including the disclosures of the references which teach away from Appellants' invention. In applying §103, the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil,* 227 USPQ 543, 551 (Fed. Cir. 1985) and cases cited therein.

Sandstrom discloses a "Rewritable Optical Data Storage Disk Having Enhanced Flatness". In order to attain the "enhanced flatness" and avoid process induced surface variations such as warpage and tilt, Sandstrom disclosed a substrate with increased thickness that is greater than or equal to approximately 1.5 mm and less than or equal to approximately 2.5 mm. (Title and Abstract and throughout the Specification) Although Sandstrom, in a general discussion of

the art mention that substrate materials can comprise a variety of materials, the focus and overall teaching of Sandstrom, when read as a whole, is to increasing the thickness of a polycarbonate substrate in order to attain the desired physical and mechanical characteristics (flatness...). Clearly if you have a material and you increase its thickness it will be stronger and may then meet certain desired characteristics. In other words, merely because a 4 inch thick piece of wood can be used as a support beam does not mean that that material can be used at a thickness of 2 inches. Hence, due to Sandstrom's teachings as a whole, unless the thicknesses of Sandstrom will be met, there is no reason to believe the materials of Sandstrom can be employed in combination with the other references of record. Since the other references do not discuss thickness or do not require such high thicknesses, an artisan would not combine Sandstrom with any of the other references of record as is suggested in the Office Action (Papers 4 and 8). This is further the case since the industry specifications for storage media do not allow the thicknesses taught by Sandstrom, and an artisan would disregard the teachings of Sandstrom. Sandstrom fails to remedy all of the above discussed deficiencies of Tanabe et al., Lewis et al., Ishida et al., and Nakayama et al.

It is further noted, with respect to the references of record relied upon to reject the present claims, namely, Tanabe et al., Lewis et al., Ishida et al., Nakayama et al., Sandstrom, Wu et al., Oniki et al., Annacone et al., Lacotte et al., and Napoli et al., it is not permissible to pick and choose among the individual elements of assorted prior art references to re-create the claimed invention, but rather "some teaching or suggestion in the references to support their use in the particular claimed combination "is needed." *Symbol Technologies, Inc. v. Opticon, Inc.* 935 F.2d at 1576, applying *SmithKline Diagnostics, Inc. v. Helena Laboratories Corp.* 859 F.2d at 887. The references, when viewed by themselves, *and not in retrospect*, must suggest the invention. *In Re Skoll*, 187 USPQ 481 (C.C.P.A. 1975).

The present application teaches and claims a substrate having a surface roughness of less than about 10Å, wherein the substrate has a thickness of up to about 1.2 mm, a plastic film, and a magnetic data layer disposed on said plastic film, wherein said magnetic data layer can be at least partly read from, written to, or a combination thereof by a magnetic field, and wherein the

storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt. (Claim 1)

The present application further teaches and claims a media comprising a metal substrate, a plastic film, and a data layer disposed on the plastic film, wherein the data layer can be at least partly read from, written to, or a combination thereof by at least one energy field comprising at least one of an electric field and a magnetic field, and wherein the storage media has a tilt of about 1° or less, measured in a resting state, and wherein the tilt is selected from the group consisting of radial tilt and tangential tilt. (Claim 30)

None of the references of record teach such a media. In the absence of hindsight and unsubstantiated assumptions (e.g., the inherency of tilt) the media is non-obvious, novel and patentable. There is insufficient motivation to combine the references of record to attain the claimed invention. The alleged inherent property of tilt is not necessarily present in the references of record and the property is not recognized or appreciated by an artisan. Therefore no *prima facie* case of obviousness has been established.

IX. CONCLUSION:

In summary, these rejections based upon inherency are unfounded and incorrect since the media described by the cited references can be produced without the allegedly inherent property as is supported by the attached Declaration of Dr. Reitz. Inherency may not be established by probabilities or possibilities. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. Appellants understand that their media is desireable; however, the fact that, in hindsight, the inventors in the references of record "may have wanted" such a media... does not render that media obvious or the properties thereof inherent. Reversal of the rejections based upon 35 U.S.C. §102 is respectfully requested.

The rejections based upon 35 U.S.C. §103 are improper for failure to establish a *prima facie* case of obviousness. This failure is for at least one of the following reasons: (i) no motivation to combine, either due to lack of any suggestion in the prior art and/or because the

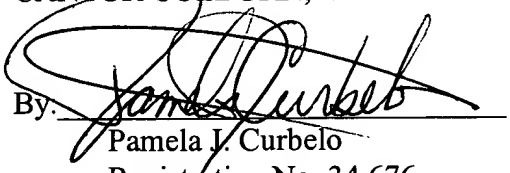
reference relied upon to allegedly provide motivation, e.g., Nakayama et al., fails to teach that magnetic and optical media are equivalents; (ii) teaching away, such as the teaching of Sandstrom of the required large thicknesses to attain the desired properties; (iii) hindsight reconstruction using the present claims as a template; (iv) because the alleged inherent property of tilt is not necessarily present; and (v) "inherency" is not a proper standard for a 35 U.S.C. §103 rejection. In view of the lack of motivation to combine, the impermissible use of hindsight, and the lack and improper use of inherency, that is, the failure to establish a *prima facie* case of obviousness, reversal of the Final Rejection is respectfully requested.

In view of the foregoing, it is urged that the Final Rejection of Claims 1 – 11, 13 – 21, and 23 – 38 be overturned and the claims allowed. The final rejection is in error and should be reversed.

If there are any additional charges with respect to this Appeal Brief, please charge them to Deposit Account No. 07-0862.

Respectfully submitted,

CANTOR COLBURN, LLP

By: 

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APPENDIX A
CLAIMS

1. A storage media for data, said media comprising:

a substrate having a surface roughness of less than about 10Å, wherein the substrate has a thickness of up to about 1.2 mm;

a plastic film; and

a magnetic data layer disposed on said plastic film;

wherein said magnetic data layer can be at least partly read from, written to, or a combination thereof by a magnetic field; and

wherein the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt.

2. The storage media as in Claim 1, wherein said rigid substrate has a Young's modulus of at least about 7 GPa.

3. The storage media as in Claim 2, wherein said Young's modulus is at least about 70 GPa.

4. The storage media as in Claim 3, wherein said Young's modulus is at least about 200 GPa.

5. The storage media as in Claim 1, wherein said substrate is selected from the group consisting of metal, glass, ceramic, and combinations comprising at least one of the foregoing.

6. The storage media as in Claim 1, wherein said plastic film comprises embossed surface features and wherein said data layer is disposed over said embosses surface features.

7. The storage media as in Claim 1, wherein said plastic film comprises embossed surface features selected from the group consisting of pits, grooves, edge features, asperities, and combinations comprising at least one of the foregoing.

8. The storage media as in Claim 1, wherein said substrate comprises a glass substrate.

9. The storage media as in Claim 1, wherein head slap characteristics of the storage media is substantially equivalent to a second media not containing the at least one plastic film.

10. The storage media as in Claim 1, wherein said storage media has a data layer with a coercivity of at least about 1,500 oersted.

11. The storage media as in Claim 1, wherein said storage media has a data layer with a coercivity of at least about 3,000 oersted.

13. The storage media as in Claim 1, wherein said plastic film comprises a thermoplastic resin with a glass transition temperature of at least 150°C.

14. The storage media as in Claim 1, wherein said plastic film comprises at least one thermoplastic resin of the group consisting of polyetherimides, polyetheretherketones, polysulfones, polyethersulfones, polyetherethersulfones, polyphenylene ethers, thermoplastic polyimides, and polycarbonates.

15. The storage media as in Claim 1, wherein said plastic film comprises at least one thermoset resin comprising embossed surface features.

16. The storage media as in Claim 1, wherein said plastic film comprises at least one thermoset resin, wherein the at least one thermoset resin is at least partially cured during a process to emboss surface features onto the at least one thermoset resin.

17. The storage media as in Claim 1, wherein said plastic film comprises at least one thermoset resin selected from the group consisting of epoxy, phenolic, alkyds, polyester, polyimide, polyurethane, mineral filled silicone, bis-maleimides, cyanate esters, vinyl, and benzocyclobutene resins.

18. The storage media as in Claim 1, wherein a thickness of said substrate and said plastic film is about 0.82 mm to about 1.25 mm.

19. A storage media, comprising:

a substrate having a top side and a bottom side;

a plastic film on each of said top side and said bottom side; and

a magnetic data layer disposed on at least one of said plastic film on said top side and said bottom side; and

wherein said magnetic data layer can be at least partly read from, written to, or a combination thereof by at least one energy field.

20. A storage media for data, said media comprising:

a substrate comprising an axial displacement peak of less than about 500 μ under shock excitation;

a plastic film comprising a surface roughness of less than about 10 Å; and

a magnetic data layer disposed on said plastic film;

wherein said magnetic data layer can be at least partly read from, written to, or a combination thereof by at least one energy field selected from the group consisting of electric and magnetic.

21. The storage media as in Claim 1, wherein said tilt is less than about 0.3°.

23. The storage media as in Claim 22, wherein said storage media thickness is about 0.8 mm to about 1.2 mm.

24. The storage media as in Claim 1, wherein said plastic film has a film thickness of up to about 50 μ.

25. The storage media as in Claim 24, said film thickness is about 0.5 μ to about 10 μ.

26. The storage media as in Claim 1, wherein said plastic film further comprises geographic locators.

27. The storage media as in Claim 26, wherein said geographic locators have a depth of up to about 30 nm.

28. The storage media as in Claim 27, wherein said geographic locators have a depth of about 20 nm to about 30 nm.

29. The storage media as in Claim 13, wherein said plastic film comprises a thermoplastic resin with a glass transition temperature of at least 200°C.

30. A storage media for data, said media comprising:

a metal substrate;

a plastic film; and

a data layer disposed on said plastic film;

wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field;

wherein said energy field comprises at least one of an electric field and a magnetic field; and

wherein the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt.

31. A storage media for data, said media comprising:

a substrate selected from the group consisting of metal, glass, ceramic, and combinations comprising at least one of the foregoing substrates, and wherein said substrate has a surface roughness of less than about 10 Å;

an embossed plastic film comprising geographic locators, wherein said plastic film has a film thickness of up to about 20 μ; and

a magnetic data layer disposed on said embossed plastic film;

wherein, when said storage media is rotating, said data layer can be at least partly read from, written to, or a combination thereof by a magnetic field; and

wherein said storage media has a media thickness of about 0.8 mm to about 1.2 mm.

32. A storage media for data, said media comprising:

a substrate having a surface roughness of less than about 10Å;

a plastic film; and

an optical data layer disposed on said plastic film;

wherein said data layer can be at least partly optically read from, written to, or a combination thereof; and

wherein the storage media has a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt.

33. A storage media for data, said media comprising:

a glass substrate;

an embossed plastic film comprising geographic locators, wherein said plastic film has a film thickness of up to about 20 μ; and

an optical data layer disposed on said embossed plastic film;

wherein, when said storage media is rotating, said data layer can be at least partly optically read from, written to, or a combination thereof.

34. The storage media as in Claim 1, wherein the plastic film has a glass transition temperature of greater than about 250°C.

35. The storage media as in Claim 30, wherein the plastic film has a glass transition temperature of greater than about 250°C.

36. The storage media as in Claim 1, wherein the plastic film is continuous.

37. The storage media as in Claim 30, wherein the plastic film is continuous.

38. The storage media as in Claim 19, wherein the substrate has a thickness of up to about 1.2 mm.